Module Card

Module Number | Modul Name | Type (C/CE/E) | Semester (proposed) | Module Coordinator
--- | --- | --- | --- | ---
BIW-M-Mod-101 | Engineering Mathematics | C | 1 | Prof. Dr. Thomas Schramm

Subject Area | Duration
--- | ---
Basics | 1 Semester

CP (according to ECTS) | Contact Hours/Week (SWS) | Self-study
--- | --- | ---
5 CP (= 150 h Workload) | 4 (= 42 h Contact Time) | 108 h

Objectives and Contents

Objective of Qualification (competencies)
Students will gain familiarity with and understand the advanced mathematical principles of engineering mathematics used for modeling and data analysis in civil engineering.

Contents

Elements of advanced engineering mathematics:
- Complex algebra and its geometric interpretation
- Multivariable real-valued functions and their Taylor expansions
- Elements of vector analysis (gradient, Jacobian and Hessian matrices)
- Fourier transformation, important theorems (fold, cross-correlation) and their application
- Types of differential equations, systems of ordinary first-order linear differential equations, interpretation of matrix exponentials, simple solution methods
- Going further with ordinary differential equations, fundamentals of numerical methods
- Mathematical basis of the finite element method
- Preview: partial differential equations

The first part of the module is identical to Module GEO-M-Mod-101 Engineering Mathematics and is conducted in English. Assignments in the form of formative e-assessments may supplement contact hours.

Recommended Literature
Kenneth A. Stroud, Dexter J. Booth, Engineering Mathematics, Palgrave Macmillan Limited, 01.01.2013 - 1155 pages
Buchanan, G. R., Schaum's Outline of Fourier Analysis with Applications to Boundary Value Problems, Mcgraw-Hill Professional, 1974

Teaching and Learning Methods
Lecture (2 Hours per Week) + Practical Seminar (2 Hours per Week)

Exam(s)

Precondition of Examination

Type of Examination | Duration of Examination (if written or oral exam)
--- | ---
Written Exam / eAssessment | 3 h

Composition of Module Mark

Mark of Exam

Additional Information

Previous Knowledge / Conditions for Participation (in form and content)
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## Module Card

### Module Number | Modul Name | Type | Semester (proposed) | Module Coordinator
--- | --- | --- | --- | ---
BIW-M-Mod-102 | Computer Science in Structural Engineering | C | 1 | Prof. Dr.-Ing. Klaus Liebrecht

### Subject Area | Duration
--- | ---
Basics | 1 Semester

### CP (according to ECTS) | Contact Hours/Week (SWS) | Self-study
--- | --- | ---
5 CP (= 150 h Workload) | 4 (= 42 h Contact Time) | 108 h

### Objectives and Contents

**Objective of Qualification (competencies)**
The finite element method (FEM) is the most widespread computer-based calculation method in statics. Due to its vivid clarity and excellent flexibility with load-bearing structures, material properties, loading and support conditions, the finite element method is used in calculating rod-shaped components and two-dimensional structures. Beginning with a theoretical introduction to the finite element method, students will be guided in unitizing and designing frameworks and two-dimensional structures on the computer and will then do so independently. Alongside learning the theoretical background and practical application of the finite element method, knowledge of the limits of the method is paramount. With their knowledge of statics, students will learn to perform independent checks on computer-aided calculations and to document them according to standard procedure.

**Contents**
- Introduction to the theory of the finite element method (FEM)
  - Derivation of basic equations
  - Energy methods and variational principles
  - Approximation method
  - Element types
- Analysis of frameworks and two-dimensional structures
  - Fundamentals
  - Mesh generation
  - Modeling bearings
  - Elastic bedding of base plates (modulus of subgrade reaction method / constrained modulus method)
  - Modeling of effects / combinatorics
  - Definition of singularities / treatment of singularities
  - Calculation of spring stiffness
  - Punching through plates
  - Wall-like beams
- Limits of FEM calculations
- Analysis of errors in FEM calculations
- Checking and documenting computer-aided calculations

**Recommended Literature**

**Teaching and Learning Methods**
Lecture (2 Hours per Week) + Practical Seminar (2 Hours per Week)

### Exam(s)

**Precondition of Examination**
passed Pre-Assignment

**Type of Examination | Duration of Examination (if written or oral exam)**
--- | ---
Written Exam (offered every semester) | Written Exam 1.5 h

**Composition of Module Mark**
Additional Information

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Module Card

Master Civil Engineering
HCU Hamburg

Module Number | Modul Name | Type (C/CE/E) | Semester (proposed) | Module Coordinator
---|---|---|---|---
BIW-M-Mod-103 | Steel Structures | C | 1 | Prof. Dr.-Ing. Manuel Krahwinkel

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<td>5 CP (= 150 h Workload)</td>
<td>4 (= 42 h Contact Time)</td>
<td>108 h</td>
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</table>

Objectives and Contents

Objective of Qualification (competencies)

Students will gain in-depth knowledge of steel and composite construction.

Contents

- Composite construction: Multistorey composite steel and concrete buildings, composite beam design, composite flooring and supports, fire protection and fire safety design in composite structures
- Steel construction: Fire protection and fire safety in steel structures, plate buckling, fatigue analysis

Recommended Literature


Teaching and Learning Methods

Lecture + Practical Seminar (4 Hours per Week)

Exam(s)

Precondition of Examination

Type of Examination | Duration of Examination (if written or oral exam)
---|---
Written Assignment |
Composition of Module Mark |
Mark of Written Assignment |

Additional Information

Previous Knowledge / Conditions for Participation (in form and content)

Applicability of Module

Frequency of Offering

every Winter Semester

Course Language

German

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BIW-M-Mod-104
Concrete Structures
C
1
Prof. Dr.-Ing. Klaus Liebrecht

Subject Area | Duration
---|---
Basics | 1 Semester

CP (according to ECTS) | Contact Hours/Week (SWS) | Self-study
---|---|---
5 CP (= 150 h Workload) | 4 (= 42 h Contact Time) | 108 h

Objectives and Contents

Objective of Qualification (competencies)
Students will gain in-depth knowledge of the calculation rules and design methods for concrete structures, which will enable them to work independently on structures of an above average level of difficulty (HOAI). The key rules for design will be derived paradigmatically to clarify the scientific procedure in developing design rules and equations.

Contents
- Bending stress: Stress redistribution (design oriented toward the compression zone)
- Design for shear force and torsion: Special case: indirect supports / rules for single loads near supports / influence of changeable component height / joining secondary beams / connection of compression and tension flanges / designing for pure torsion / designing for shear force and torsion / structural details
- Wall design: Shear walls / segmented shear walls / diaphragms / construction
- Bracing: Analysis of sufficient lateral and torsional rigidity in braced structures / distribution of horizontal loads on bracing components / design of bracing components
- Single compression members: Consideration of creep effects / compression members with biaxial eccentricity / construction
- Special reinforced concrete components (discontinuity regions): Frame design / designing brackets, half joints, etc.
- Subarea surface pressure and tensile splitting: Design and construction / bearing construction

Recommended Literature
Avak, Conchon, Aldejohann: Stahlbetonbau in Beispielen Teil 1, ab 7. Auflage, Bundesanzeiger Verlag, Köln (2016)
Quast, Ulrich: Nichtlineare Statik im Stahlbetonbau, Bauwerk Verlag Berlin (2007)
Schneider: Bautabellen für Ingenieure, ab 20. Auflage, Köln, Werner Verlag

Teaching and Learning Methods
Lecture + Practical Seminar (4 Hours per Week)

Exam(s)

Precondition of Examination

Type of Examination | Duration of Examination (if written or oral exam)
---|---
Written Exam | 3 h
Note: Optional homework assignments will be given.

Composition of Module Mark

Mark of Exam

Additional Information

Previous Knowledge / Conditions for Participation (in form and content)

Applicability of Module

Compulsory Elective Special Constructions: Prestressed Concrete (recommended)
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Module Card

Master Civil Engineering
HCU Hamburg

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<tr>
<td>BIW-M-Mod-105</td>
<td>Façade Structures I</td>
<td>C</td>
<td>1</td>
<td>Prof. Dr.-Ing. Frank Wellershoff</td>
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Subject Area
Architectural Engineering

Duration
1 Semester

CP (according to ECTS) | Contact Hours/Week (SWS) | Self-study
5 CP (= 150 h Workload) | 4 (= 42 h Contact Time)  | 108 h

Objectives and Contents

**Objective of Qualification (competencies)**
- Design planning:
  - Pre-selection of location and suitable façade structures specific to the building
  - Design planning of façade structures under conditions of static loading and building physics

**Contents**
- Design planning:
  - Historical development of façade construction in various cultures and regions
  - Building users’ comfort requirements specific to activity (temperature, fresh air, humidity, sound level, lighting)
  - Aspects of power efficiency (nighttime cooling, shading, solar energy, wind energy)
  - Aspects of economic efficiency (low-maintenance planning, double-skin façades with forced ventilation, surface coatings)
  - Environment – and sustainability certification systems (BREEM, LEED, DGNB)
  - Typology of façade structures (punctuated façades, post and beam façades, double-skin, cable truss façades, lattice shell)
  - Identifying geometry (flat surfaces, developable surfaces, non-developable surfaces, freeform surfaces)
  - System decision criteria, assessment criteria
  - Building materials and products and their joining and anchoring principles (natural stone, clay stone, concrete, wood, plastic, metal, glass: basic materials, production and finishing processes
  - Interaction among building concept, building technology and façade system
  - Planning load-bearing systems (overall structural system, subsystem, elements)
  - Serviceability / deformation (interaction among structural deformities and façade deformities)
  - Serviceability / watertightness (definition of requirements, overview of test methods)
  - Manufacturing method and tolerances
  - Production quality management (dimensional accuracy, coat thickness, surface quality, welds)
  - Mounting method and tolerances

**Recommended Literature**
Herzog et. al.: Fassaden Atlas, Birkhäuser Verlag
Schittich; Glasbau Atlas, Birkhäuser Verlag
Weller et. al.: Konstruktiver Glasbau, Edition Detail
Schittich: Gebäudehüllen, Birkhäuser Verlag
Watts: Moderne Baukonstruktion, Fassaden, Springer Verlag

**Teaching and Learning Methods**
Lecture + Practical Seminar (4 Hours per Week)
Excursion (optional)

**Exam(s)**

**Precondition of Examination**

**Type of Examination**
Duration of Examination (if written or oral exam)

**Term Paper**
The Term Paper consists of subtasks worked on throughout the semester. The examination is given once a year.

**Composition of Module Mark**

**Mark of mark term paper**

**Additional Information**
Previous Knowledge / Conditions for Participation (in form and content)
This module uses knowledge of statics, building construction and construction physics (recommended).

Applicability of Module
Façade Structures I is the prerequisite for enrolling in Façade Structures II (mandatory)

Frequency of Offering
every Winter Semester

Course Language
German

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Module Card

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<tr>
<td>BIW-M-Mod-106</td>
<td>Environmental Impact Assessment</td>
<td>C</td>
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<td>Prof. Dr.-Ing. Wolfgang Dickhaut</td>
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Subject Area
Infrastructural Engineering

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<td>4 (= 42 h Contact Time)</td>
<td>108 h</td>
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Objectives and Contents

Objective of Qualification (competencies)
- Knowledge of the basics of environmental assessment in technical infrastructure planning and projects
- The skill of preparing an environmental impact assessment

Contents
- Environmental assessment – theoretical approaches, limits and possibilities, assessment values/limiting values, interaction
- Legal bases in planning/programs and projects of technical infrastructure
- Strategic environmental assessment of plans and programs as well as environmental impact assessment of projects
  - Procedure – actors, process, participation
  - Methods
  - Protected resources – entitlement to protection and effects of plans/projects
  - Project examples
- Environmental impact assessment of concrete examples

Recommended Literature
Gassner, Winkelbrandt, Bernotat; UVP und strategische Umweltprüfung – rechtliche und fachliche Anleitung für die Umweltprüfung; 2010
Fürst, Scholles; Handbuch Theorien und Methoden der Raum- und Umweltplanung; 2008
Morris, Therivel; Methods of Environmental Impact Assessment; 2009

Teaching and Learning Methods
Lecture and Seminar (4 Hours per Week)
Excursion (optional)

Exam(s)

Precondition of Examination
Compulsory Attendance 80%

Type of Examination
Written Assignment and Presentation

Duration of Examination (if written or oral exam)

Composition of Module Mark
Mark of Written Assignment 70% / Presentation 30%

Additional Information

Previous Knowledge / Conditions for Participation (in form and content)

Applicability of Module

Frequency of Offering
every Winter Semester

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<tr>
<td>BIW-M-Mod-201</td>
<td>Structures of Underground Engineering</td>
<td>C</td>
<td>2</td>
<td>Prof. Dr.-Ing. habil. Kerstin Lesny</td>
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<td>Basics</td>
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### Objectives and Contents

#### Objective of Qualification (competencies)

Students will gain familiarity with more complex geotechnical constructions and selected methods of underground engineering and will be able to assess their mode of operation and suitability for various applications. Students will be familiar with pertinent design methods and will be able to assess their suitability on a case-by-case basis. They will be fluent in a practical engineering software program suitable for addressing selected problems in this field.

#### Contents

- Foundations (laterally loaded piles, pile groups, combined pile raft foundations)
- Low-grade deformation excavation sheeting, deep excavations, excavations in water, supporting/retaining structures
- Earth and landfill construction procedures; measures for improving excavations
- Introduction to the GGU software suite and computing selected geotechnical structures

#### Recommended Literature

for example:

### Teaching and Learning Methods

Lecture + Practical Seminar (2 Hours per Week)

Excursion (optional)

### Exam(s)

#### Precondition of Examination

#### Type of Examination

Oral Exam

The examination is offered only in summer semester.

#### Duration of Examination (if written or oral exam)

#### Composition of Module Mark

mark of Oral Exam

### Additional Information

#### Previous Knowledge / Conditions for Participation (in form and content)

#### Applicability of Module

#### Frequency of Offering

every Summer Semester

#### Course Language

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Master Civil Engineering
HCU Hamburg

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<tr>
<td>BIW-M-Mod-202</td>
<td>Maintenance and Restoration of Buildings</td>
<td>C</td>
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<td>Prof. Dr.-Ing. Gesa Kapteina</td>
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Subject Area | Duration
Basics | 1 Semester

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Objectives and Contents

Objective of Qualification (competencies)
- Knowledge gained about building materials and their interaction with the environment will enable students to identify critical aspects of a structure with regards to durability.
- Given a problem based in practice, students will be able to select an appropriate diagnostic method and will have the knowledge required analyze and apply it.
- Selection of restoration concepts depending on cause of damage, as well as knowledge of the use and processing of restoration materials.

Contents
- In-depth knowledge of building materials (i.e. concrete, glass, plastic, wood) and their mechanisms of damage
- Properties of and processing restoration materials
- Recognizing damage and damage diagnostics of structures and assessment procedures
- Maintenance (comparison of actual and nominal conditions, remaining service life, restoration concepts)
- Restoration planning using selected examples

Recommended Literature

Teaching and Learning Methods
Lecture + Practical Seminar (4 Hours per Week)
Excursion (optional)

Exam(s)
Precondition of Examination

Type of Examination | Duration of Examination (if written or oral exam)
Written Exam | 2 h

Composition of Module Mark
Mark of Exam

Additional Information
Previous Knowledge / Conditions for Participation (in form and content)

Applicability of Module

Frequency of Offering
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<td>Construction Physics</td>
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**Objectives and Contents**

**Objective of Qualification (competencies)**

Planning a space with optimal user comfort (air, light, sound)

**Contents**

- Heat and energy: Comfort criteria, thermal comfort; heat transmission, resistance, thermal bridges, U-value; unsteady-state heat transfer: cooling and heating processes, periodic temperature fluctuations; summer thermal insulation, excess temperature and time; fundamentals of numerical solution methods, thermal simulation programs, energy balance rooms; ventilation, physiological and biophysical features, air change rate, heat recovery

- Soundproofing in building construction: Loudness, annoyance, noise effects; sound insulation for the building envelope; flanking transmission (longitudinal sound insulation), ISO 12354 calculation methods; impact sound insulation (parameters, slabs and coverings); structure-borne sound insulation (waterborne sound / noise from sanitary and building equipment and appliances)

- Light planning: Physical and physiological fundamentals of light sources, light propagation and reflection; numerical calculation methods (radiosity), natural light use, directional light, practical optimization, quantification of daylight autonomy

**Recommended Literature**

- Hausladen et. al.: Climate Design, Birkhäuser Verlag
- Hausladen et. al.: Climate Skin, Callwey Verlag
- Broban: Handbuch der Bauphysik, Rudolf Müller Verlag

**Teaching and Learning Methods**

Lecture + Practical Seminar (4 Hours per Week)

Excursion (optional)

**Exam(s)**

**Precondition of Examination**

**Type of Examination**

Term Paper

The Term Paper consists of subtasks worked on throughout the semester. The exam is given once a year.

**Duration of Examination (if written or oral exam)**

**Composition of Module Mark**

The highest mark for the term paper is 100 points. It determines students’ overall mark.

**Additional Information**

**Previous Knowledge / Conditions for Participation (in form and content)**

**Applicability of Module**

Material covered in this module is a prerequisite for Energy-related Building Technology (3rd semester).

**Frequency of Offering**

every Summer Semester

**Course Language**
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<tr>
<td>BIW-M-Mod-204</td>
<td>Shell and Spatial Structures</td>
<td>C</td>
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<td>Prof. Dr.-Ing. Annette Bögle</td>
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Subject Area

 Architectural Engineering

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Objectives and Contents

Objective of Qualification (competencies)

- Students will gain competence in calculating and designing spatial structures. Further, they will gain the ability to design spatial structures.
- Competence will be acquired in understanding the particular relationships between structural form, loads and material.

Contents

- Definitions of spatial structures: Plates, grillages, discs and shells; (Membranes and tensile structures not addressed here)
- Shaping spatial structures: Load transfer efficiency, design and function
- Structural behavior and calculation of plates and grillages
- Structural behavior and calculation of discs
- Structural behavior and calculation of annular girders
- Structural behavior and calculation of shells
- Membrane theory of rotation shells and hyperboloids; bending theory of shells
- Project examples

Recommended Literature

Marti, P: Baustatik, Ernst & Sohn, Berlin 2012.

Teaching and Learning Methods

Lecture + Practical Seminar (4 Hours per Week)
Excursion (optional)

Exam(s)

Precondition of Examination

Type of Examination | Duration of Examination (if written or oral exam)
--------------------|--------------------------------------------------
Written Exam        | 3 h                                              

Composition of Module Mark

Additional Information

Previous Knowledge / Conditions for Participation (in form and content)

Applicability of Module
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<tr>
<td>BIW-M-Mod-205</td>
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Subject Area          | Duration          |
-----------------------|-------------------|
Architectural Engineering | 1 Semester       |

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### Objectives and Contents

#### Objective of Qualification (competencies)
- To learn to carry out a complex design project in planning load-bearing structures
- Structuring a planning processes for a complex real-life project in load-bearing structure design throughout various phases (base analysis, variant analysis, design, dimensioning and construction) and working independently in disciplinary planning teams
- Discussion of planning content in planning teams as well as presenting planning results
- Learning working methods of design and practicing disciplinary project work as a first step in preparation for inter-disciplinary project work

#### Contents

**Interdisciplinary Project:**
- Formation of "engineering offices" (work groups). 3 - 4 students create an "engineering office," which must elaborate all planning phases.
- Introductory events/orientation. Explanation of the procedure and organization of the study project, presentation of the task, presentation of key marginal conditions
- Presentations on specialist topics: In the initial weeks of the project, introductory talks ("expert input sessions") will be given on individual specialist topics of particular importance to the working process
- Advisory units: Students periodically give a condensed report on their project status. Questions that arise will be addressed. The advisory units also serve as a performance review (possibly to set a deadline for tasks not completed according to schedule)
- Planning meetings. In the course of the project seminar, the "engineering offices" regularly submit interim reports (as oral presentations by the students). As part of the oral presentations, problems are identified and solutions are presented in general terms. The planning meetings also serve as a performance review.
- Independent work. Working out the basics, developing planning content, preparing presentations, compiling the final report (drafts, calculations, drawings, models)

#### Recommended Literature

#### Teaching and Learning Methods
- Project (2 Hours per Week)
- Excursion (optional)

### Exam(s)

**Precondition of Examination**

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**Mark of Documentation and Presentation**
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# Module Card

**Module Number**: BIW-M-Mod-206  
**Module Name**: Paradigm Change in the Built Environment  
**Type (C/CE/E)**: C  
**Semester (proposed)**: 2  
**Module Coordinator**: Prof. Dr.-Ing. Martin Jäschke

### Subject Area
- Infrastructural Engineering

### Duration
- 1 Semester

### CP (according to ECTS) vs Contact Hours/Week (SWS) vs Self-study
- **CP (according to ECTS)**: 5 CP (= 150 h Workload)  
- **Contact Hours/Week (SWS)**: 4 (= 42 h Contact Time)  
- **Self-study**: 108 h

### Objectives and Contents

**Objective of Qualification (competencies)**

To be able to recognize, assess and take part in shaping paradigm shifts in the field of technical infrastructure

**Contents**

- Paradigm shifts and their formation in the past
- Theoretical basics: i.e. change management
- Examples of current paradigm shifts:
  - Energy-efficient building planning, i.e. energy planning and design (form follows energy)
  - Strategies of the Smart City
  - Transport, i.e. electromobility, car sharing, shared space, car-free districts or mobility stations
  - Water management, i.e. decentralized rain water management or separation of flow streams in wastewater treatment
  - Energy supply and power grids, i.e. switching to regenerative energy or solar cells on noise barriers
  - Environmental protection, i.e. open data, combined effects or salutogenesis
- Technologies for the above
- Focus: processes, responsibilities, barriers, instruments
- Exemplary projects

**Recommended Literature**

Lauer: Change Management: Grundlagen und Erfolgsfaktoren;

**Teaching and Learning Methods**

Lecture and Seminar (4 Hours per Week)

**Excursion (optional)**

### Exam(s)

**Precondition of Examination**

Compulsory Attendance 80%

**Type of Examination**

Written Assignment and Presentation

**Duration of Examination (if written or oral exam)**

Composition of Module Mark

Mark of Written Assignment 70% / Presentation 30%

### Additional Information

**Previous Knowledge / Conditions for Participation (in form and content)**

**Applicability of Module**

**Frequency of Offering**

every Summer Semester

**Course Language**
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<tr>
<td>BIW-M-Mod-207</td>
<td>Urban Waters</td>
<td>C</td>
<td>2</td>
<td>Prof. Dr.-Ing. Wolfgang Dickhaut</td>
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Subject Area | Duration
Infrastructural Engineering | 1 Semester

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<td>4 (= 42 h Contact Time)</td>
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Objectives and Contents

Objective of Qualification (competencies)
- Competence in the modification and ecological development of urban waters
- Skills in elaborating a plan for urban water development

Contents
- Urban waters – specific constraints and challenges
- Urban water development objectives according to WRRL, HWRMR and WHG; coordination with urban development
- Methods of evaluation
- Planning and implementation: spatial planning, technical planning
- Measures for creating a good ecological state/potential, for example:
  - Managing run-off
  - Water structure: bottom, slope
  - Structures on the water, effects on urban development
  - Continuity of structures
  - Flood protection
  - Structures: bridges, operational discharge
  - Leisure and recreation
  - Maintenance and care
  - Landscape preserving design
- Exemplary projects

Recommended Literature
- DWA_Merk- und Arbeitsblätter
- LAWA_Richtlinien
- http://www.hamburg.de/wrrl/
- https://www.umweltbundesamt.de/daten/gewaesserbelastung/fliessgewaesser

Teaching and Learning Methods
- Lecture and Seminar (4 Hours per Week)
- Excursion (optional)

Exam(s)

Precondition of Examination
Compulsory Attendance 80%

Type of Examination Duration of Examination (if written or oral exam)
Written Assignment and Presentation
Composition of Module Mark
Mark of Written Assignment 70% / Presentation 30%
### Additional Information

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### Module Card

**Module Number:** BIW-M-Mod-208  
**Modul Name:** Planning Processes Restructuring/ Retrofitting of Technical Infrastructure

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### Objectives and Contents

**Objective of Qualification (competencies):**
- To be able to carry out planning and approval procedures in converting and rehabilitating technical infrastructure in the urban context (i.e. costs, time, acceptance, environmental compatibility)
- To be able to select and involve relevant actors and design cooperative planning procedures

**Contents:**
- Review and deepen knowledge of the legal bases of planning and approval procedures, in particular for the conversion/rehabilitation of the plan approval procedures (Administrative Procedure Act, VwVfG) relevant to technical infrastructure (i.e. Regional Planning Procedures, ROG; IT master plan (BauGB))
- Relevant requirements in immissions, water protection, soil conservation and environmental protection laws
- Designing planning and approval procedures (i.e. actor analysis and selection, designing cooperative planning processes, conflict strategies)
- Organizing appointments for actors and citizen participation (i.e. moderation techniques, mediation, conducting discussions)
- Structuring public relations (i.e. informational materials, press work)

**Recommended Literature:**
ROG, BauGB, BauNVO: Texte und Kommentare; VDI 7000 und 7001

**Teaching and Learning Methods:**
Lecture and Seminar (4 Hours per Week)  
Excursion (optional)

### Exam(s)

**Precondition of Examination:**
Compulsory Attendance 80%

**Type of Examination:**
Written Assignment and Presentation

**Duration of Examination (if written or oral exam):**

**Composition of Module Mark:**
Mark of Written Assignment 70% / Presentation 30%

### Additional Information

**Previous Knowledge / Conditions for Participation (in form and content):**

**Applicability of Module:**

**Frequency of Offering:**
every Summer Semester

**Course Language:**
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<td>BIW-M-Mod-209</td>
<td>Construction Techniques Restructuring / Retrofitting of Technical Infrastructure</td>
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**Subject Area**

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**Objectives and Contents**

**Objective of Qualification (competencies)**

Students will gain advanced competence in the planning and execution of restructuring and retrofitting measures for technical infrastructure. Central subjects include: security of energy supplies, maintenance strategies, rehabilitation planning and their exemplary application in a fictional project.

**Contents**

- Planning inspections and implementation of supply and waste lines
- Maintenance strategies
  - Grid-based strategies
  - Activity-based strategies
  - Staffing strategies
- Theories of aging (damage accumulation, fatigue, statistics)
- Life cycle management with the reliability theory (according to Herz and Weibull)
- Repair design, renovation practices
  - General
  - Planning and calculation (according to DWA ATV A 127 T2, GSTT Information)
  - Exemplary projects
- Use of innovative methods (i.e. temporarily flowable backfill materials)
- Cost-benefit analysis
- Technical dependencies of different infrastructures
- Excursion

**Recommended Literature**


**Teaching and Learning Methods**

Lecture and Seminar (4 Hours per Week)
Excursion (optional)

**Exam(s)**

**Precondition of Examination**

Compulsory Attendance 80%

**Type of Examination**

Duration of Examination (if written or oral exam)

**Written Assignment and Presentation**

Composition of Module Mark

Mark of Written Assignment 70% / Presentation 30%
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Subject Area: Architectural Engineering
Duration: 1 Semester

CP (according to ECTS) | Contact Hours/Week (SWS) | Self-study |
------------------------|--------------------------|------------|
5 CP (= 150 h Workload) | 4 (= 42 h Contact Time) | 108 h

Objectives and Contents

Objective of Qualification (competencies)
- Final planning:
  - Final static planning of façade structures (overall bearing structure, elements, connections)

Contents
- Final planning:
  - Protection requirements for wind, snow, rain, hail, fire, burglary, collision, falls and explosions
  - Planning structural details (connections, sealing, water flow)
  - Structural safety (fundamentals of safety concepts and load-bearing capacity in international comparison)
  - Structural analysis (stability and dynamic strength of framework elements, load-bearing capacity and connection rigidity)
  - Dynamic analysis (vibration susceptibility to wind load, spectral method, transient calculations, explosion calculations)

Recommended Literature
- Herzog et. al.: Fassaden Atlas, Birkhäuser Verlag
- Schittich: Glasbau Atlas, Birkhäuser Verlag
- Weller et. al.: Konstruktiver Glasbau, Edition Detail
- Schittich: Gebäudehüllen, Birkhäuser Verlag
- Watts: Moderne Baukonstruktion, Fassaden, Springer Verlag

Teaching and Learning Methods
Lecture + Practical Seminar (2 Hours per Week)
Excursion (optional)

Exam(s)

Precondition of Examination

Type of Examination | Duration of Examination (if written or oral exam)
---------------------|--------------------------------------------------|
Term Paper           | The Term Paper consists of several tasks throughout the semester. The exam is given once a year.

Composition of Module Mark
Mark of Term Paper

Additional Information

Previous Knowledge / Conditions for Participation (in form and content)
Facade Structures I is the prerequisite for enrolling in Facade Structures II (mandatory).

Applicability of Module

Frequency of Offering
every Summer Semester

Course Language
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**Subject Area**

Infrastructural Engineering

**Duration**

1 Semester

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<td>5 CP (= 150 h Workload)</td>
<td>4 (= 42 h Contact Time)</td>
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**Objectives and Contents**

**Objective of Qualification (competencies)**

The students gain further competencies in the field of energy infrastructure. In the beginning, they will get an overview of the technologies used for energy supply. For this purpose, generation plants, distribution systems and house connection systems are presented across sectors. This is followed by an insight into the interaction of energy production, the needs and how the transformation of energy systems is controlled by demand forecasts. In the area of the distribution of thermal energy, students learn in-depth the engineering design of networks from the determination of heat losses to the tubular proof of a district heating pipe. On the electricity side, the topics of route planning (strategic environmental planning, environmental impact planning, etc.) for overhead lines, earth cabling, line technology, high voltage, medium voltage, low voltage networks are also covered.

**Contents**

- Energy supply technologies
  - Energy sources, renewables and extraction of fossil fuels
  - Generation plants
  - Distribution
  - Connection and customer systems, transfer stations, booster stations
- Assessments and forecasts
  - Interplay between supply and demand (merit order, operation, performance balance)
  - Energy Forecasting
- Thermal energy networks
  - Construction technique of heat distribution
  - Dimensioning of heat losses and pipe statics
- Electric energy networks
  - Route planning
  - Overhead line vs. Underground cabling
  - Field trip

**Recommended Literature**

- Schlabbach J., Elektroenergieversorgung: Betriebsmittel, Netze, Kennzahlen und Auswirkungen der elektrischen Energieversorgung, VDE-Verlag, 2009

**Teaching and Learning Methods**

- Lecture and Seminar (4 Hours per Week)
- Excursion (optional)

**Exam(s)**

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**Precondition of Examination**
## Additional Information

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Module Card

Master Civil Engineering
HCU Hamburg

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<tr>
<td>BIW-M-Mod-302</td>
<td>Energy-Related Building Technology</td>
<td>C</td>
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Subject Area: Architectural Engineering
Duration: 1 Semester

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Objectives and Contents

Objective of Qualification (competencies)
- Conceptual energy-optimized planning of a building observing the interaction among site, use, building envelope and building automation and control systems
- To recognize the relationships among building shape, façade, resultant user comfort and energy demand in early planning phases
- Method of integral planning

Contents
- Energy fundamentals: Energy balances, (primary, final and end-use energy), fossil and non-fossil energy sources, legal and future requirements, outdoor climate, comfort
- Passive and active solar components: Heating systems, ventilation and air conditioning, passive house technologies, resource-efficient (i.e. cogeneration plants, fuel cells, etc.) and innovative energy supply technologies, energy concepts
- Planning artificial lighting: DIN 18599 (overview)
- Energy Saving Ordinance (EnEV) and accessible software
- Interplay of building envelope and technology
- Selection criteria of resultant building automation and control systems and optimization of the architectural design

Recommended Literature
Hegger et. al: Energie Atlas, Birkhäuser Verlag
Hausladen et. al.: Climate Design, Birkhäuser Verlag
Hausladen et. al.: Climate Skin, Callwey Verlag

Teaching and Learning Methods
Lecture + Practical Seminar (2 Hours per Week)
Excursion (optional)

Exam(s)

Precondition of Examination

Type of Examination | Duration of Examination (if written or oral exam)
--- | ---
Term Paper |  

The Term Paper consists of several tasks throughout the semester.

Composition of Module Mark

The highest score possible on the term paper is 100 points. This determines students’ overall mark.

Additional Information

Previous Knowledge / Conditions for Participation (in form and content)
Knowledge and skills acquired in the master’s module, Construction Physics (recommended)

Applicability of Module
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## Module Card

### Module Number
BIW-M-Mod-303

### Modul Name
Stability and Dynamics of Structures

### Type (C/CE/E)
C

### Semester (proposed)
3

### Module Coordinator
Prof. Dr.-Ing. Manuel Krahwinkel

### Subject Area
Architectural Engineering

### Duration
1 Semester

### CP (according to ECTS)
5 CP (= 150 h Workload)

### Contact Hours/Week (SWS)
4 (= 42 h Contact Time)

### Self-study
108 h

## Objectives and Contents

### Objective of Qualification (competencies)
Students will master the basic principles of structural dynamics and gain depth of knowledge in the practice of stability analysis.

### Contents
- Stability of structures: Examples on the subject of stability from building practice
- Dynamics of structures: Problems and tasks of structural dynamics, differential equations of motion, modal analysis, direct integration, models of single and multiple degrees of freedom, practical applications (i.e. machine bases, pedestrian bridges, seismic design, impact)

### Recommended Literature
- Petersen, C.: Dynamik der Baukonstruktionen, Springer Vieweg, 2000

### Teaching and Learning Methods
Lecture + Practical Seminar (4 Hours per Week)

## Exam(s)

### Precondition of Examination

### Type of Examination
Written Exam

### Duration of Examination (if written or oral exam)
3h

## Additional Information

### Previous Knowledge / Conditions for Participation (in form and content)

### Applicability of Module

### Frequency of Offering
every Winter Semester

### Course Language
German

### valid from
Winter Semester 16/17

### valid to

### last updated
19.06.2019
## Module Card

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<tr>
<td>BIW-M-Mod-304</td>
<td>Computer Aided Engineering CAE</td>
<td>C</td>
<td>1</td>
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### Subject Area
- **Architectural Engineering**

### Duration
- **1 Semester**

### CP (according to ECTS)
- **5 CP (= 150 h Workload)**
- **Contact Hours/Week (SWS)**: **4 (= 42 h Contact Time)**
- **Self-study**: **108 h**

## Objectives and Contents

### Objective of Qualification (competencies)
- Students will gain competence in designing narrow spatial frame structures and doubly curved plate structures using efficient computer-aided methods of generation and calculation.
- Students will gain skills in using computer-aided form-finding processes and their coupling with digital calculation and realization processes.

### Contents
- Introduction to the task of form-finding in engineering: Identification of various form-finding processes and their implementation
- Analytic description of the geometry of a form (mathematical principles)
- Geometric parameters of form-finding, parameter variation and its effect on form (parametric design with Grasshopper)
- Methods of experimental form-finding, relationship between form and load
- Digital form-finding on the basis of experimental methods (pneumatic models, soap bubble, suspension models, etc.) with the aid of Kangaroo Physics
- Interface numerical FEM calculation (RSTAD, RFEM, Karamba)
- Methods of form optimization

### Recommended Literature

### Teaching and Learning Methods
- Lecture + Practical Seminar (4 Hours per Week)

### Exam(s)

#### Precondition of Examination

#### Type of Examination

#### Duration of Examination (if written or oral exam)

#### Term Paper

### Composition of Module Mark
- The Term Paper consists of various tasks. The precise composition of the overall mark will be announced at the beginning of the semester

### Additional Information

#### Previous Knowledge / Conditions for Participation (in form and content)
- Knowledge of the programs Rhino 3D and Grasshopper (recommended)
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<td>BIW-M-Mod-305</td>
<td>Design Project II</td>
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<td>1 Semester</td>
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<th>Contact Hours/Week (SWS)</th>
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<td>4 (= 42 h Contact Time)</td>
<td>258 h</td>
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### Objectives and Contents

**Objective of Qualification (competencies)**

- Students will gain competence in executing a complex interdisciplinary design project involving the planning of load-bearing structures
- Students will acquire the ability to structure and carry out the planning process for an actual complex structural design project over various phase (base analysis, variant analysis, design, dimensioning and construction) as well as to work independently in disciplinary planning teams
- Students will acquire the skill of specialist collaboration and discussion in interdisciplinary teams

**Contents**

**Interdisciplinary Project:**

- Introduction to the assignment: Presentation of the context of the design task: location and content
- Input workshops on specific subjects
  - Team formation, acquaintance with the assignment
  - Subjects relevant to the project (i.e. load-bearing structures, functionality, implementing an idea, itemization)
- Visualization (plans, models)
- Corrective feedback: Students and teachers will meet in voluntary and mandatory feedback sessions distributed throughout the semester. The students’ current state of progress and any arising issues will be addressed; problems will be addressed and solutions formulated.
- Presentations: Mandatory presentations occur on specific dates throughout the semester. They are an opportunity to convey one’s own project to an audience as well as for the teachers to discuss students’ individual projects.
- Independent interdisciplinary team work

**Recommended Literature**

- Block, P.; u.a.: Faustformel Tragwerksentwurf, Deutsche Verlags-Anstalt, München, 2013.
- Wüstenrot Stiftung (Hrsg.): Raumpilot Grundlagen, Karl Kraemer Verlag, Stuttgart und Zürich, 2014.

**Teaching and Learning Methods**

- Lecture + Project (4 Hours per Week)
- Excursion (optional)

**Exam(s)**

**Precondition of Examination**

Mandatory attendance at (interim) presentations, workshops and excursions

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<td>Composition of Module Mark</td>
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Presentation and documentation are marked. The precise composition of the overall mark will be announced at the beginning of the semester.
### Additional Information

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<tr>
<td>BIW-M-Mod-306</td>
<td>Design of Technical Infrastructure</td>
<td>C</td>
<td>3</td>
<td>Prof. Dr.-Ing. Martin Jäschke</td>
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</table>

### Subject Area
- Infrastructural Engineering

### Duration
- 1 Semester

### CP (according to ECTS) | Contact Hours/Week (SWS) | Self-study |
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<td>4 (= 42 h Contact Time)</td>
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### Objectives and Contents

#### Objective of Qualification (competencies)
- Ability to conduct complex design projects in the area of planning technical infrastructure
- Demonstrate experience in structuring planning processes by working independently on various phases (base analysis, variant analysis, design, dimensioning and construction) of a real complex project in disciplinary planning teams.
- Ability to discuss and present planning content and results
- Knowledge, understanding and ability to take into account the particularities of interdisciplinary project work

#### Contents

**Interdisciplinary Project:**
- Formulation of “engineering offices” (work groups). 3 -4 students create an “engineering office,” which must elaborate all planning phases.
- Introductory events/orientation. Explanation of the procedure and organization of the study project, presentation of the task, presentation of key marginal conditions
- Presentations on specialist topics: In the initial weeks of the project, introductory talks (“expert input sessions”) will be given on individual specialist topics of particular importance to the working process. If students wish to have expert input sessions beyond these they must be planned for later. Here talks by students are especially desirable.
- Advisory units: Students periodically give a condensed report on their project status. Questions that arise will be addressed. The advisory units also serve as a performance review (possibly to set a deadline for tasks not completed according to schedule)
- Planning meetings. In the course of the project seminar, the “engineering offices” regularly submit interim reports (as oral presentations by the students). As part of the oral presentations, problems are identified and solutions are presented in general terms. The planning meetings also serve as a performance review and are to be recorded or documented by the students.
- Independent work. Working out the basics, developing planning content, preparing presentations, compiling the final report (drafts, calculations, drawings, models)

#### Recommended Literature
To be announced based on the project assignment

#### Teaching and Learning Methods
- Project (4 Hours per Week)
- Exkursion (optional)

### Exam(s)

#### Precondition of Examination
Compulsory Attendance 80%

#### Type of Examination | Duration of Examination (if written or oral exam)
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#### Composition of Module Mark
- Mark of Documentation 70% / Presentation 30%
### Additional Information

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### Objectives and Contents

**Objective of Qualification (competencies)**
- Advanced knowledge of the basics of water-sensitive urban development, in particular integrated planning (water, landscape, city/building) at different levels of scale
- Ability to carry out a in water-sensitive urban design project

**Contents**
- Urban development and water management – developments and dependencies
- Water-sensitive urban design in international perspective
- Water management fundamentals – review
- Citywide planning: requirements, methods, examples
- District-level planning: requirements, methods, measures, examples
- Site-level planning: requirements, methods, measures, design, examples
- Reconstruction of existing buildings and its challenges

**Recommended Literature**
- Hoyer, Dickhaut, et al; Water sensitive urban design; 2011
- Dreiseitl, Grau; Wasserlandschaften; 2006
- Sieker, Kaiser, Sieker; Dezentrale Regenwasserbewirtschaftung; 2006
- DWA_Arbeits- und Merkblätter

**Teaching and Learning Methods**
- Lecture and Seminar (4 Hours per Week)
- Excursion (optional)

**Exam(s)**

**Precondition of Examination**
- Compulsory Attendance 80%

**Type of Examination**
- Written Assignment and Presentation

**Duration of Examination (if written or oral exam)**
- Composition of Module Mark
- Mark of Written Assignment 70% / Presentation 30%

**Additional Information**

**Previous Knowledge / Conditions for Participation (in form and content)**

**Applicability of Module**

**Frequency of Offering**
### Course Language

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every Winter Semester

Course Language

German
## Module Card

**Master Civil Engineering**  
**HCU Hamburg**

<table>
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<tr>
<th>Module Number</th>
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<tr>
<td>BIW-M-Mod-308</td>
<td>Road Design</td>
<td>C</td>
<td>3</td>
<td>Prof. Dr.-Ing. Martin Jäschke</td>
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**Subject Area**  
Infrastructural Engineering

**Duration**  
1 Semester

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<td>5 CP (= 150 h Workload)</td>
<td>4 (= 42 h Contact Time)</td>
<td>108 h</td>
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### Objectives and Contents

**Objective of Qualification (competencies)**

- students gain a current overview of the state of the debate on the topic of urban transport
- students get to know the most important topics on road concepts and road design
- students deepen individual design aspects by means of examples

**Contents**

- Mobility in cities, a historical classification
- State of the present debate on mobility in cities
  - Transport modes, how is the transport organized
  - Influences on transport in cities, from transport development plans to neighbourhood mobility concepts
- Urban road space
  - Requirements under different demands: Connections, how much space is needed for movement? Place to stay, is it necessary? Delivery traffic, annoying, but we keep on ordering “on demand”; Stationary traffic; Autonomous driving, a profit or a risk for the city? Cycle traffic, also needs space?
  - The capacity of roads: rough calculation of nodes; LISA+, an overview; VISSIM, a simulation of traffic flows
  - Design elements, what is important?
  - Urban technology, what is lying under the road?
- Special infrastructure
  - Systems of cycle traffic; for example fast lane for bicycles
  - Mobility-hubs
- The planning process, is there a recipe for success?
- Deepening of individual issues by means of examples
- Excursion, which road space is sustainable?

**Recommended Literature**

- RAST 06, FGSV
- ESG, Empfehlungen zur Straßenraumgestaltung, FGSV
- Schöne Straßen und Plätze, Hrg. Dr. Harald Heinz
- Städte für Menschen, Jan Gehl
- Handbuch der kommunalen Verkehrsplanung, Bracher Dziekan, Gies, Huber, Kiepe, Reutter, Saary, Schwedes
- Stadtstruktur und Stadtgestaltung, Gerhard Curdes
- Radialer Städtebau, Abschied von der autogerechten Stadtregion, H. Bodenschatz, A. Hofmann, C. Polinna (Hrg.)

**Teaching and Learning Methods**

- Lecture and Seminar (4 Hours per Week)
- Excursion (optional)

### Exam(s)

**Precondition of Examination**

Compulsory Attendance 80%

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**Master Civil Engineering**  
**HCU Hamburg**

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<th>Module Number</th>
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<tr>
<td>BIW-M-Mod-309</td>
<td>Immission Control / Noise Control</td>
<td>C</td>
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### Subject Area

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<th>Duration</th>
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<td>Infrastructural Engineering (Civil Engineering), Interdisciplinary Specification (Urban Planning)</td>
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### CP (according to ECTS)

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<td>4 (= 42 h Contact Time)</td>
<td>108 h</td>
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### Objectives and Contents

#### Objective of Qualification (competencies)

- Detailed knowledge, understanding application and evaluation of immission and noise control
- Knowledge and understanding of various scientific methods and solution strategies
- To be able to explore a new subject area independently
- Persuasive presentation and discussion, both written and oral, of a topic of the student’s choosing, responding appropriately to critical questions; ability to work in a team

#### Contents

- Selected aspects of immission and noise control will be addressed in depth, including:
  - Scientific foundations and interdisciplinary relationships
  - Effects on the environment, health, quality of life and human wellbeing
  - Methods of data collection and evaluation: measurements, calculations, surveys; cumulative impact
  - Avoidance, reduction and other measures
  - Examples, projects, practical aids, information sources, contact persons

Main subjects include fundamental and current issues. Noise is one focus, in particular the EC Environmental Noise Directive, which is exemplary many respects. Other immissions (air pollutants, smells, etc.) will also be covered.

#### Recommended Literature

- Sinambari & Sentpali: Ingenieurakustik; Fachzeitschrift: Immissionsschutz; Fachzeitschrift: Lärmbekämpfung

#### Teaching and Learning Methods

- Lecture and Seminar (4 Hours per Week)
- Excursion (optional)

### Exam(s)

#### Precondition of Examination

 Compulsory Attendance 80%

#### Type of Examination

<table>
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<th>Written Assignment and Presentation</th>
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#### Duration of Examination (if written or oral exam)

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### Additional Information

#### Previous Knowledge / Conditions for Participation (in form and content)

#### Applicability of Module

#### Frequency of Offering

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<td>Prof. Dr.-Ing. Annette Bögle</td>
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<td>4 (= 42 h Contact Time) or 2 x 2 (= 2 x 21 h Contact Time)</td>
<td>108 h or 2 x 54 h</td>
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### Objectives and Contents

**Objective of Qualification (competencies)**
- Increasing breadth and depth of particular disciplinary knowledge
- Profiling the personal portfolio

**Contents**
- A course worth 5 CP is to be chosen from the catalog of mandatory electives for the civil engineering program.
- OR
- Two courses worth 2.5 CP each are to be chosen from the catalog of mandatory electives for the civil engineering program.

**Recommended Literature**
Varies by course

**Teaching and Learning Methods**
Lecture and Practical Seminar (4 Hours per Week or 2 x 2 Hours per Week)
Excursion (optional)

### Exam(s)

**Precondition of Examination**
Varies by course

**Type of Examination**
Varies by course

**Duration of Examination (if written or oral exam)**
Varies by course

**Composition of Module Mark**
Varies by type of Examination

### Additional Information

**Previous Knowledge / Conditions for Participation (in form and content)**

**Applicability of Module**

**Frequency of Offering**
every Semester

**Course Language**
German or English

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Master Civil Engineering
HCU Hamburg

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<tr>
<td>BIW-M-Mod-403</td>
<td>Thesis (ASPO 2015)</td>
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<td>Prof. Dr.-Ing. Annette Bögle</td>
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</tbody>
</table>

Subject Area | Duration
--- | ---
Thesis | 1 Semester

CP (according to ECTS) | Contact Hours/Week (SWS) | Self-study
--- | --- | ---
20 CP (= 600 h Workload) | | 600 h

### Objectives and Contents

**Objective of Qualification (competencies)**
The master's thesis is an examination paper. It will demonstrate the candidate’s ability to work through a problem in civil engineering independently, according to scientific methods and by a predetermined deadline.

**Contents**
The exam consists of a problem from the master’s curriculum in civil engineering. The first examiner will hand out the topic.

**Recommended Literature**
Varies by subject

**Teaching and Learning Methods**
Independent Written Term Paper

For further information, see “Informationen zur Bachelor-/Masterthesis” on the homepage

### Exam(s)

**Precondition of Examination**
Preconditions for the examination paper are stipulated in the general and degree-specific examination regulations of HCU Hamburg.

**Type of Examination**
Thesis, Presentation, Colloquium

2 copies (each with a hard copy and a digital copy on CD)

**Duration of Examination (if written or oral exam)**

**Composition of Module Mark**
Thesis 80%, presentation and colloquium 20%
(first and second examiners’ marks each comprise one half of the evaluation)

### Additional Information

**Previous Knowledge / Conditions for Participation (in form and content)**

**Applicability of Module**

**Frequency of Offering**
any time

**Course Language**
German

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<td>[Q] STUDIES</td>
<td>C</td>
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Subject Area | Duration
---|---
Fachübergreifende Studienangebote (FaSt)/cross-curricular Programme | 1 Semester

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<th>CP (according to ECTS)</th>
<th>Contact Hours/Week (SWS)</th>
<th>Self-study</th>
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<tr>
<td>5 CP (= 150 h Workload)</td>
<td>4 (= 42 h contact time)</td>
<td>108 h</td>
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**Objectives and Contents**

**Objective of Qualification (competencies)**
- Reflection competencies: scientific analysis and reflection
- Cultural competencies: transdisciplinary and intercultural communication
- Perception and design competencies: creative and innovative design
- The ability to act: proactive and responsible action

**Contents**

a) [Q] STUDIES I
- Different courses with theoretical emphasis
- Opportunities to train the perception and creativity through
- Practical project work such as the development of course concepts and their implementation

b) [Q] STUDIES II
- see above

**Fields of Study:**
- Science | Technology | Knowledge
- Media | Art | Culture
- Economy | Politics | Society

**Recommended Literature**
will be announced in the lecture

**Teaching and Learning Methods**
2x seminar / lecture + tutorial / project (2x 2,5 CP; 2x 2 SWS)
Excursion (optional)

**Exam(s)**

**Precondition of Examination**
80% participation, active participation, accompanying assignments

**Type of Examination**
to be defined by each teacher and course

**Duration of Examination (if written or oral exam)**
Composition of Module Mark
2 x 50%

**Additional Information**

**Previous Knowledge / Conditions for Participation (in form and content)**
none

**Applicability of Module**

**Frequency of Offering**
each Semester

**Course Language**
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### Module Card

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<th>Semester (proposed)</th>
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<td>BS-M-Mod-001</td>
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<td>C</td>
<td>Winter term</td>
<td>Prof. Dr. Thomas Krüger</td>
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**Subject Area**

Fachübergreifende Studienangebote (cross-curricular Programme)

**CP (according to ECTS)** | Contact Hours/Week (SWS) | Self-study |
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<td>5 CP (= 150 h Workload)</td>
<td>4 (= 42 h contact time)</td>
<td>1-2 Semester</td>
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### Objectives and Contents

**Objective of Qualification (competencies)**

- project management competencies including soft skills
- ability to survey, apply and critically reflect project management tools

**Contents**

1) Lecture
   a) Basics: Projektmanagement Vorlesung
   b) Basics: Project Management Lecture (English-language Programms)
   - Tools, Instruments, Parties and organisational Context of project management

2) Seminar (organized by the master programs)
   - Each cohort deepens an area of project management relevant for the respective discipline in an interactive way that fits to and supports the program students' needs and uses program-related topics as examples.

**Recommended Literature**

1) Lecture
   a) Basics: Projektmanagement Vorlesung
   b) Basics: Project Management Lecture
   - Literature will be announced in the lecture

2) Seminar

**Teaching and Learning Methods**

1) Lecture (2,5 CP; 2 SWS)
2) Seminar (2,5 CP; 2 SWS) / Excursion (optional)

### Exam(s)

**Precondition of Examination**

1) Lecture: none
2) Seminar: 80% Participation

**Type of Examination** | Duration of Examination (if written or oral exam)
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<tr>
<td>1) Lecture: Exam / term paper</td>
<td>1) Lecture: 90 min / -</td>
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<tr>
<td>2) Seminar: form of examination to be defined by each program</td>
<td>2) Seminar: to be defined by each program</td>
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**Composition of Module Mark**

1) Lecture: 50%
2) Seminar: 50%

### Additional Information

**Previous Knowledge / Conditions for Participation (in form and content)**

none

**Applicability of Module**
### Frequency of Offering

1) each winter term  
2) to be defined by each program

### Course Language

German and English

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